fluid flow.

[0092] It is shown that the shut off valve 2 can be provided with more than one type of gasket seals, and more than one type of flow control means to control the fluid through the valv . It is also shown that the same cage can be used to accommodate several types of valves. It is also understood that the valve can be manufactured from more than one type of material. Corners will all be rounded to desired roundness. Other types of gasket seals not shown in the drawings may be adapted anywhere in the valve to replace the gasket seals shown in the drawings. It is also understood that various types of restricting elements to limit the rotation of the shut off valve can be employed. It is also understood that locking bearings are optional and may not be required in many cases, especially where the pipelines are short and where the flow of fluid in the piping system comes to a halt at once. Whereas this invention is here illustrated and described with specific reference to embodiments thereof presently contemplated as the best mode of carrying out such invention in actual practice, it is to be understood that various changes may be made in adapting the invention to different embodiments without departing from the broader inventive concepts disclosed herein and comprehended by the claims that follow:

I claim:

[0093] 1. A fluid control, pressure reducing valve, comprising:

a cylindrical cage, having at least one inlet opening to

receive fluid from the upstream pipe of the pipeline, and one outlet opening to discharge fluid to the downstream pipe of the pipeline, and said cage configured to receive a rotatable cylindrical shut off valve in said cage's inner cylindrical cavity, whith the cylindrical shut off valve having the same number of correspond matching openings as whatever the cage has, and with said cylindrical shut off valve having two opposite seats with equal and evenly distributed plurality of openings that are passage means for the passage of fluid, and said seats are connected with the partitioning means to create an inlet chamber to receive fluid from the inlet of the cage and an outlet chamber to discharge fluid to the outlet opening of the cage;

flow control means, responsive to pressurized fluid, located on said seats to block and to control fluid flow through said passage means for the passage of fluid;

means to supply pressurized fluid to said flow control means for controllably restricting each of said passage means to thereby control flow of fluid through the valve;

drive means to rotate, with respect to the cage, said cylindrical shut off valve received in the vertical cylindrical cavity of the cage;

at least one detachable covering means to enclose the shut off valve provided with the flow control means;

locking means to lock the cylindrical shut off valve, while allowing said shut off valve to remain rotatable, with the cage, and to also limit the rotation of the cylindrical shut off valve

with respect to the cage;

sealing means to seal the fluid exit from the valve.

[0094] 2. A flow control and pressure reducing valve according to claim 1, wherein the flow control means, to control fluid through said openings that are passage means, are hat shaped elastomeric diaphragms seated on said two opposite seats, whereby they control fluid flow from the inlet chamber of the cylindrical valve to the outlet chamber of the cylindrical valve.

[0095] 3. A flow control and pressure reducing valve according to claim 1, wherein the means to supply pressurized fluid to said control means are needle and pilot control valves located outside the valve.

[0096] 4. A flow control and pressure reducing valve according to claim 1, wherein the drive means to rotate said cylindrical shut off valve is a shaft connected to the shut off valve through intermediate radial means, having an integral circular fringe that is provided with means to connect said fringe to the shut off valve.

[0097] 5. A flow control and pressure reducing valve according to claim 1, wherein the partitioning means is a flat plate that divides the cylindrical shut off valve into two equal parts, and creates an inlet chamber to receive fluid from the inlet opening of the cage and an outlet chamber to discharge fluid to the outlet opening of the cage.

[0098] 6. A fluid control, pressure reducing valve, comprising:

a cylindrical cage, op n on both ends, having at least one inlet opening to receive fluid from the upstream pipe of the pipeline, and one outlet op ning to discharge fluid to the downstr am pipe of the pipeline, and said cage configured to receive a rotatable cylindrical shut off valve in said cage's inner cylindrical cavity, whith the cylindrical shut off valve having the same number of correspond matching openings as whatever the cage has, and with said cylindrical shut off valve having two opposite seats with equal and evenly distributed plurality of openings that are passage means for the passage of fluid, and said seats are connected with the partitioning means to create an inlet chamber to receive fluid from the inlet opening of the cage and an outlet chamber to discharge fluid to the outlet opening of the cage;

flow control means, responsive to pressurized fluid, located on said seats to block and to control fluid flow through said passage means for the passage of fluid;

means to supply pressurized fluid to said flow control means for controllably restricting each of said passage means to thereby control flow of fluid through the valve;

drive means to rotate, with respect to the cage, said cylindrical shut off valve received in the vertical cylindrical cavity of the cage;

at least one detachable covering means to enclose the shut off valve provided with the flow control means;

locking means to lock the cylindrical shut off valve, whil

allowing said shut off valve to r main rotatable, with r spect to the cag , and to also limit the rotation of the cylindrical shut off valve within the cage;

sealing means to seal the fluid exit from the valve.

[0099] 7. A flow control and pressure reducing valve according to claim 6, wherein the flow control means to control fluid through said openings that are passage means for the passage of fluid, are pistons seated on said two opposite seats, whereby they control fluid flow from the inlet chamber of the cylindrical valve to the outlet chamber of the cylindrical valve.

[0100] 8. A flow control and pressure reducing valve according to claim 6, wherein the means to supply pressurized fluid to said control means are needle and pilot control valves located outside the valve.

[0101] 9. A flow control and pressure reducing valve according to claim 6, wherein the drive means to rotate said cylindrical shut off valve is a shaft connected to the shut off valve through intermediate radial means, having an integral circular fringe that is provided with means to connect, said fring to the shut off valve.

[0102] 10. A flow control and pressure reducing valve according to claim 6, wherein the partitioning means is a concentric cylinder open on both sides inside the cylindrical shut off valve, integrally connected to said two seats and connected also to the cylindrical wall of the shut off valve by

means of a reducer pipe.

[0103] 11. A fluid control, pressure reducing valve, comprising:

a cylindrical cage, having at least one inlet opening to receive fluid from the upstream pipe of the pipeline, and one outlet opening to discharge fluid to the downstream pipe of the pipeline, and said cage configured to receive a rotatable cylindrical shut off valve in said cage's inner cylindrical cavity, whith the cylindrical shut off valve having the same number of correspond matching openings as whatever the cage has, and with said cylindrical shut off valve having two opposite seats with equal and evenly distributed plurality of openings that are passage means for the passage of fluid, and said seats are connected with the partitioning means to create an inlet chamber to receive fluid from the inlet of the cage and an outlet chamber to discharge fluid to the outlet opening of the cage;

flow control means, responsive to pressurized fluid, locat d on said seats to block and to control fluid flow through said passage means for the passage of fluid;

means to supply pressurized fluid to said flow control means for controllably restricting each of said passage means to th reby control the flow of fluid through the valve;

drive means to rotate, with respect to the cage, said cylindrical shut off valve received in the vertical cylindrical cavity of the cage;

at least one detachable covering means to enclose the shut

off valve provided with the flow control means;

locking means to lock the cylindrical shut off valve, while allowing said shut off valve to remain rotatable, within the cage, and to also limit the rotation of the cylindrical shut off valve with respect to the cage;

sealing means to seal the fluid exit from the valve.

[0104] 12. A flow control and pressure reducing valve according to claim 11, wherein flow the control means to control fluid through the openings that are passage means, are hat shaped elastomeric diaphragms seated on said two opposite seats, whereby they control fluid flow from the inlet chamber of the cylindrical valve to the outlet chamber of the cylindrical valve.

[0105] 13. A flow control and pressure reducing valve according to claim 11, wherein the means to supply pressurized fluid to said control means are needle and pilot control valves located outside the valve.

[0106] 14. A flow control and pressure reducing valve according to claim 11, wherein the drive means to rotate said cylindrical shut off valve is a shaft connected to the shut off valve through intermediate radial means, having an integral circular fringe that is provided with means to connect said fringe to the shut off valve.

[0107] 15. A flow control and pressure reducing valve according to claim 11, wherein the piped partitioning means is a pipe held integrally in place in the cylindrical shut off valve betw en two opposite seats provided for the elastomeric

diaphragms and said pipe's two ends are int grally held to the cylindrical wall of said shut of valve.

[0108] 16. A flow control and pressure reducing valve according to claim 1, wherein the primary s al is a tubular pipe seal having corresponding matching openings with the openings in the cylindrical cavity of the cage and in the wall of the cylindrical shut off valve to seal the flow of fluid between the two.

[0109] 17. A flow control and pressure reducing valve according to claim 11, wherein a seal, having corresponding openings preferably matching the openings in the inlet and outlet openings of the cage and also corresponding to the openings in the wall of the cylindrical shut off valve, to seal the flow of fluid between the cage and the cylinderical shut off valve, is a reducer seal in the reducer inlet and outlet of the cage.

[0110] 18. A flow control and pressure reducing valve according to claim 1, where said locking means to lock the cylindrical shut off valve to the cage and to also limit the rotation of the cylindrical shut off valve in the cage with respect to the central cavity of the cage, are wedge bearings and bolt bearings used in combination, or with the wedge bearings used on one end of the valve while the bolt bearings are used on the other end of the valve.

[0111] 19. A flow control and pressure reducing valve according to claim 6, where said locking means to lock the cylindrical shut off valve to the cage and to also limit the

rotation of the cylindrical shut off valve in the cage with respect to the central cavity of the cage, are wedge bearings and bolt bearings used in combination, or with the wedg bearings used on one end of the valve while the bolt bearings ar used on the other end of the valve.

[0112] 20. A flow control and pressure reducing valve according to claim 11, where said locking means to lock the cylindrical shut off valve to the cage and to also limit the rotation of the cylindrical shut off valve in the cage with respect to the central cavity of the cage, are wedge bearings and bolt bearings used in combination, or with the wedge bearings used on one end of the valve while the bolt bearings are used on the other end of the valve.